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Federal Communications Commission
Washington, D.C.

In the matter of RM-11306

I am not in favor of the proposed modification of the Amateur Radio Rules part 97 as outlined within RM-11306. The proposed rule changes recently recommended by the American Radio Relay League (hereafter referred to as ARRL) ad hoc committee on digital communications, fails to fully recognize the potential future of digital communications as well as calling for some obsolescence of exiting modes of operation and experimentation. This attempt to develop a radically different means of band segmentation in the Amateur Radio Service fully misses the point of amateur radio expansion to digital radio and is unacceptable as proposed. Additionally, Amateur Radio regulation should become less complex, not increasingly elaborate and difficult to enforce, as the subject proposal would implement it. The Amateur Radio Service fosters all types of experimentation and I submit that the proposed bandwidth restrictions will significantly limit such experimentation crippling creativity and thereby resulting in an untenable situation.

The ARRL has apparently set an arbitrary bandwidth limit of 3.5 KHz as the widest form of transmission excluding DSB-AM in the HF region of the spectrum. This impedes the use of wider bandwidth digital voice and video modes such as used by Digital Radio Mondiale (DRM) or similar modes of Orthogonal Frequency Division Multiplexing (OFDM), currently in use by broadcasters. These modes require at least 5 KHz bandwidth and 10 KHz to obtain high quality performance over HF channels using existing compression algorithms in today's state of the art. There are new experimental modes utilizing OFDM for digital voice which have recently been introduced in Amateur Radio. This mode is limited to 3.5 KHz bandwidth and the performance of these systems is very poor exhibiting significant bit error rates. This demonstrates the inadequacy of the proposed rules of 3.5 KHz for digital voice in the current state of the art. One of the purposes of development of such a system is to improve the voice quality of Single Sideband (SSB) transmission. With the significantly high bit error rate realized under typical atmospheric paths in the HF spectrum, this mode when limited to 3.5 KHz, provides inferior quality to it's analog counterpart SSB transmission. To make digital voice practical with an improvement over analog SSB voice quality a bandwidth of 10 KHz would be appropriate.

Future band planning offered by the FCC should allow for this kind of experimentation and operation for those that wish to participate in this development within the Amateur Radio Service. Any prohibition of bandwidth or mode of operation would be excessively restrictive and would hamper future growth of the hobby. Let us remember that this is a hobby and should foster the highest level of diversity allowing hobbyists to grow in technical expertise. Since many digital modes have not been invented yet it would be unfortunate to introduce regulations that would hinder innovation within the Amateur Radio Service.

Another area I feel compelled to take issue with in the ARRL proposal is the elimination of Independent Sideband from the rules claiming that ISB is not currently used and has not been in use for over ten years (Paragraph 14 RM-11306). This is completely false and is an uninformed conclusion by the ARRL. I have personally developed such an exciter that I use in Amateur Radio on a regular basis along with many other interested amateur radio operators. The exciter was developed using modern Digital Signal Processing (DSP) techniques and is one of the Software Radio classes of transmitters that I developed in the late 1990's. This radio is capable of ISB, DSB or SSB, with any ratio of carrier to modulation, to complete suppression of the carrier. This radio has been used to demonstrate independent simultaneous transmission of slow scan video and voice, as well as Stereo AM, Compatible Single Sideband (CSSB), and single sideband AM all with high fidelity results. When restructuring the amateur bands it should be remembered that development is not just in the field of digital radio. There are many analog applications that will continue to be conceived and developed as well. These analog transmissions should not be unduly bound by amateur radio restrictions any more than new digital forms of transmission. This type of development offers much experimentation and innovation allowing amateur radio operators to flourish in their personal technical development.

The proposed suggestion on limitation of SSB operation to 3.5 KHz creates another unfounded restriction of the rules. In the last five years there has been great enthusiasm in the amateur radio community to improving SSB voice quality. Many amateur radio operators have modified their radios to allow for increased bandwidth and distortion reduction to improve the modulation character of their signals. Very high quality transmissions can be realized with these radios and users of such enjoy much accomplishment and joy from these advances in analog radio. An enhancement to this is illustrated by the use of SSB with trace carrier which can be used with common synchronous detection to yield very high fidelity transmissions in half the bandwidth of AM DSB but it requires more bandwidth than 3.5 KHz. Just as those who operate DSB AM and enjoy full modulation fidelity, those that wish to accomplish this on SSB should be allowed to do so. Any

prohibition of this operation would levy significant hardship on those that have developed radios to accomplish this.

While the proposed rule changes made by the ARRL attempt to Grandfather AM DSB by allowing 9 KHz bandwidth it is argued that this is restrictive to the mode. Many amateurs are capable of generating very high fidelity signals in AM DSB that possess sibilant components to at least 8 KHz audio bandwidth which are naturally occurring in human speech. 4.5 KHz would be the highest audio frequency allowed under the ARRL's proposal. These components would exceed the proposed bandwidth limitation of 9 KHz by almost a factor of two. Conformance to these rules would require the use of external audio filtering that in some cases may cause extensive modification of older vintage amateur transmitters thereby imposing undue hardship on these operators.

Under the proposed regulation it can be argued that such a bandwidth regulation of any mode may be very difficult to enforce. I realize that many amateurs think that the Amateur Radio Service is self-regulating and wouldn't this be a wonderful thing if it were really true. However, hypothetically when conflicts over interference due to excessive bandwidth occur, it will be difficult to determine the validity of the claim. Is the Commission interested in complicating it's role by presiding over these skirmishes or would a unequivocal method of regulation be more desirable? The monitoring of each amateur radio operator in these disputes for bandwidth is a significant task that may be challenged technically. The mode of operation is a clear indication of transmission and expected bandwidth. This latter suggestion provides a much clearer and enforceable means of regulation.

While the ARRL has given significant thought to this subject and has attempted to provide thoughtful consideration to older analog modes of operation, it is apparent that the proposal falls short of an acceptable solution. This proposal attempts to enable new digital radio experimentation but in doing so it introduces new restrictions on other digital and analog modes as outlined in these comments to the proposal. This serves to stifle experimentation in some areas. It also unduly introduces regulation that will be a significant enforcement burden for the FCC. I believe that if reorganization of the amateur bands is necessary, then the conceptual architecture for this needs to be much simpler and along the lines of deregulation not more regulation. In doing so such a concept would not exclude any practical experimentation yielding a fare and simple means of permitting new and presently unforeseen modes of transmission from use.

Thank you for your attention in this manner,

Sincerely,

Peter C. McNulty
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